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| 10/810,144      | 03/26/2004  | Charles E. Baldwin   | 103850.000001       | 8858             |

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EXAMINER

LEE, SHUN K

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 2884     |              |

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/810,144

Applicant(s)

BALDWIN ET AL.

Examiner

Shun Lee

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-12 and 16-18 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 3-5, 8 and 9 is/are allowed.  
6) ☒ Claim(s) 2, 6, 7, 10-12 and 16-18 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 3/26/04, 8/11/04, & 4/26/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 7, 11, and 16 are objected to because of the following informalities:
  - (a) in claim 7, "the flexible tube" on line 2 should probably be --said tubular member--;
  - (b) in claim 11, "the flexible tube" on line 2 should probably be --said tubular member--; and
  - (c) in claim 16, "an interior region" on line 5 should probably be --a scintillation chamber--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 2, 6, 7, 10-12, and 16-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

New independent claim 16 recites the limitation "wherein said photodetection unit determines a level of product within said container, based on a quantity of said detected scintillating photons".

Applicant has not pointed out where the new claim is supported, nor does there appear to be a written description of the claim limitations in the application as filed (MPEP § 2163.04).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US 3,717,760) in view of Siegmund *et al.* (US 5,266,808) and Kaminskis *et al.* (US 3,501,632).

In regard to claims **16-18**, Martin discloses (Fig. 3) a flexible radiation detector used for sensing a level of a product within a container, said detector comprising:

(a) an elongated flexible tubular member (44) that is physically located at a surface of a container (48), said tubular member (44) having a second closed end (see Fig. 3 and column 4, lines 47-49), said tubular member (44) having an interior region that is substantially filled with a liquid scintillation material (column 4, lines 47-49) which is sensitive to detecting ionizing radiation, but is not substantially sensitive to detecting radioactive particles (e.g., gamma radiation; column 2, lines 56-58); and

(b) a photodetection unit (62) operably positioned relative to an end of the tubular member (44) to detect scintillating photons generated in said liquid scintillation material, which are indicative of ionizing radiation passing into the scintillation chamber;

wherein said photodetection unit (62) determines a level of product within said container (48), based on a quantity of said detected scintillating photons (column 4, lines 18-34).

The detector of Martin lacks a first closed end including a substantially optically-transparent first end closure member and that the tubular member is flexible and substantially surrounded by an opaque, flexible protective sheath. However, scintillating optical fibers are well known in the art. For example, Siegmund *et al.* teach (column 1, line 11 to column 2, line 2) that scintillating optical fibers include scintillating glass fibers, scintillating plastic fibers, or minute sealed capillaries filled with a scintillating liquid wherein the scintillating material converts some of the energy of energetic ionizing particles to light which is then transmitted along the fiber or fibers by internal reflection

to the end face where it is detected by means of various electro-optical devices.

Kaminskas *et al.* teach (column 3, lines 12-35; column 5, lines 31-34) to provide flexible light pipes enclosed by aluminum tubes or the like, in order to obtain a convenient and economical construction which is protected from environmental conditions and can be releasably mounted in any desired manner. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a substantially optically-transparent first end closure member in order to seal the tubular member and to provide an opaque, flexible protective sheath substantially surrounding the tubular member in the detector of Martin, in order to obtain a convenient and economical construction which is protected from environmental conditions and can be releasably mounted in any desired manner.

7. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US 3,717,760) in view of Siegmund *et al.* (US 5,266,808) and Kaminskas *et al.* (US 3,501,632) as applied to claim 16 above, and further in view of Nath (US 3,995,934).

In regard to claims 2 and 6 which are dependent on claim 16, the modified detector of Martin lacks an expansion chamber having a fixed volume and is in fluid communication with the scintillation chamber. Nath teaches (column 4, lines 7-23) to provide a fixed volume expansion chamber in fluid communication with the liquid wave guide, in order to maintain a constant liquid wave guide pressure despite temperature variations. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a fixed volume expansion chamber in the modified

detector of Martin, in order to maintain a constant liquid wave guide pressure despite temperature variations.

8. Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US 3,717,760) in view of Siegmund *et al.* (US 5,266,808) and Kaminskas *et al.* (US 3,501,632) as applied to claim 16 above, and further in view of Wojcik *et al.* (US 5,859,946).

In regard to claims 2 and 7 which are dependent on claim 16, the modified detector of Martin lacks an expansion chamber having a variable volume for accommodating volumetric expansion of the liquid scintillation material, the chamber being external of and in fluid communication with the flexible tube and including a movable wall therein. Wojcik *et al.* teach (Fig. 1) an expansion chamber (30) having a variable volume, the chamber (30) being external of and in fluid communication (26, 28) with the flexible tube (14) and including a movable wall (20) therein in order to accommodate volumetric expansion of a liquid scintillation material (16). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide an expansion chamber in the modified detector of Martin, in order to accommodate volumetric expansion of the liquid scintillation material.

9. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US 3,717,760) in view of Siegmund *et al.* (US 5,266,808) and Kaminskas *et al.* (US 3,501,632) as applied to claim 17 above, and further in view of Majewski *et al.* ("Economical detectors based on safe liquid scintillators", Nuclear

Instruments and Methods in Physics Research A 414, pg. 289-298, 1998) and Meisner *et al.* (US 5,061,849).

In regard to claims **10** and **11** which are dependent on claim 17, the modified detector of Martin lacks a light reflector substantially surrounding the scintillation chamber and within the protective sheath and that the light reflector includes a flexible sheet substantially surrounding the sidewalls of the flexible tube. Majewski *et al.* teach (section 3 on pg. 291) to wrap TEFLON™ tape around the quartz cuvettes containing the scintillation liquid in order to optimize light collection. Further, the properties of commercially available TEFLON™ tape are well known in the art. For example, Meisner *et al.* teach (column 9, lines 59-62) teach that TEFLON™ tape are known as a reflector to those skilled in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to wrap a flexible light reflective sheet substantially around the sidewalls of the flexible tube in the modified detector of Martin, in order to optimize light collection.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US 3,717,760) in view of Siegmund *et al.* (US 5,266,808) and Kaminskas *et al.* (US 3,501,632) as applied to claim 16 above, and further in view of Rozsa (US 6,407,390).

In regard to claim **12** which is dependent on claim 16, the modified detector of Martin lacks that the photodetection circuitry includes temperature sensing circuitry that compensates for a shift in the detection of scintillating photons as a result of temperature variation in the detector. However, scintillator temperature compensation



is well known in the art. For example, Rozsa teaches (column 1, line 10 to column 2, line 8) it is well known in the art to provide temperature sensing circuitry (e.g., comprising a thermistor) that compensates for a shift in the detection of scintillating photons as a result of temperature variation in the detector. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide temperature sensing circuitry in the modified detector of Martin, in order to compensate for temperature variations.

***Allowable Subject Matter***

11. Claims 3-5, 8, and 9 are allowed.

12. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be directed to a nonobvious improvement over the invention disclosed in US Patent Application Publication 2004/0051048. The improvements comprise in combination with other recited elements: (a) a slidable piston member is operably positioned in the scintillation chamber to define a variable volume expansion chamber free of liquid scintillation material adjacent to the second end as recited in claim 3 (and claims 4 and 5 which depend from claim 3); (b) a spring means positioned to bias a movable wall toward the liquid scintillation material as recited in claim 8; and (c) a member positioned to selectively immobilize the movable wall in a fixed position as recited in claim 9.

***Response to Arguments***

13. Applicant's arguments with respect to new independent claim 16 (and claims which are dependent on claim 16) have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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